STATE OF NEBRASKA

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Governor

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REVISED CONSTRUCTION PERMIT

PERMIT NUMBER: CPM05-0005

**PREVENTION OF SIGNIFICANT DETERIORATION (PSD)
PERMIT TO CONSTRUCT AN
AIR CONTAMINANT SOURCE
IS HEREBY ISSUED TO:**

Nebraska Public Power District
PO Box 499
Columbus, Nebraska 68602-0499

FOR THE SPECIFIC CONSTRUCTION OF:

A Nominal 250-megawatt Combined Cycle Electrical Generating Station

TO BE LOCATED AT:

Beatrice Power Station
20261 SW 61st Road
Beatrice, Nebraska 68310

The Beatrice Power Station is located approximately four and one-half miles northwest of Beatrice, Nebraska. The facility site is located in Section 12 of Township 4 North, Range 5 East, in Gage County.

This Revised Construction Permit supercedes the Construction Permit issued March 29, 2003, and approves the construction of the following emission units and associated equipment for the Beatrice Power Station:

- Two General Electric 7E Class natural gas-fired stationary combustion turbines with heat recovery steam generators (Units 001and 002).
- Two natural gas-fired supplemental duct burners (Units 003 and 004) with a nominal heat input rating of 22.9 MMBtu/hr each.
- One steam powered turbine generator.
- One natural gas/distillate oil-fired auxiliary boiler (Unit 005) with a nominal heat input rating of 28.4 MMBtu/hr when firing gas and 27.1 MMBtu/hr when firing distillate oil.
- One distillate oil-fired standby electrical generator (Unit 006) with a nominal heat input rating of 8.0 MMBtu/hr.
- One distillate oil-fired fire pump (Unit 007) with a nominal heat input rating of 1.5 MMBtu/hr.
- One evaporative cooling tower (Unit 008).

This source is a major source subject to the federal Prevention of Significant Deterioration of Air Quality (PSD) regulations, 40 CFR 52.21 (incorporated in Nebraska Air Quality Regulations Title 129, Chapter 19). This source is subject to the Acid Rain provisions of Title IV of the Clean Air Act.

Compliance with this permit shall not be a defense to any enforcement action for violation of an ambient air quality standard.

This permit is issued with the following conditions:

General Conditions

I. This permit is not transferable to another source or location. (Title 129, Chapter 17)

II. Holding of this permit does not relieve the owner/operator of the source from the responsibility to comply with all applicable portions of the Nebraska Air Quality Regulations and any other requirements under local, State, or Federal law. (Title 129, Chapter 41)

III. Any applicant who fails to submit any relevant facts or who has submitted incorrect information in a permit application shall, upon becoming aware of such failure or incorrect submittal, promptly submit such supplementary facts or corrected information. If the source wishes to make changes at the facility that will result in change(s) to values, specifications, and/or locations of emission points that were indicated in the permit application (or other supplemental information provided by the applicant and reviewed by the Department in issuance of this permit), the source must receive approval from the Department before the change(s) can be made. In addition, any modification which may result in an adverse change to the air quality impacts predicted by atmospheric dispersion modeling (such as changes in stack parameters or increases in emission rates, potential emissions, or actual emissions) shall have prior approval from the Department. The source shall provide all necessary information to verify that there are no substantive changes affecting the basis upon which this permit was issued. Information may include, but not be limited to, additional engineering, modeling and ambient air quality studies. (Title 129, Chapter 17, Section 006, 007, & 008)

IV. Approval to construct, reconstruct and/or modify the source will become invalid if a continuous program of construction is not commenced within 18 months after the date of issuance of the construction permit, if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable period of time. (Title 129, Chapter 17, Section 012)

V. The owner/operator of the source shall provide a notification to the Department of the anticipated date of initial startup, postmarked not more than 60 days nor less than 30 days prior to such date, and of the actual date of initial startup, postmarked within 15 days after such date, of each independently operable emission unit, process, or group of equipment or emission units. (Title 129, Chapter 17, Section 012 & Chapter 18, Section 001.01)

VI. The permittee shall allow the Department, EPA or an authorized representative, upon presentation of credentials to (Title 129, Chapter 8, Section 012.02):

(A) Enter upon the permittee's premises at reasonable times where a source subject to this permit is located, emissions-related activity is conducted or records are kept, for the purpose of ensuring compliance with the permit or applicable requirements;

(B) Have access to and copy, at reasonable times, any records, for the purpose of ensuring compliance with the permit or applicable requirements;

(C) Inspect at reasonable times any facilities, pollution control equipment, including monitoring and air pollution control equipment, practices, or operations, for the purpose of ensuring compliance with the permit or applicable requirements;

(D) Sample or monitor at reasonable times substances or parameters for the purpose of ensuring compliance with the permit or applicable requirements.

VII. Applicable regulations: Title 129 - Nebraska Air Quality Regulations as amended September 25, 2005.

VIII. This permit may contain abbreviations and symbols of units of measure, which are defined in 40 CFR Part 60.3. Other abbreviations may include, but are not limited to, the following:

Best Available Control Technology (BACT)
Code of Federal Regulations (CFR)
Compilation of Air Pollutant Emission Factors, Volume I, Stationary Point and Area Sources (AP-42)
Carbon Monoxide (CO)
Construction Permit (CP)
Continuous Emissions Monitor (CEM)
United States Environmental Protection Agency (EPA)
Hazardous Air Pollutant (HAP)
Maximum Achievable Control Technology (MACT)
Megawatt (MW)
Million British Thermal Units Per Hour (MMBtu/hr)
National Ambient Air Quality Standards (NAAQS)
New Source Performance Standards (NSPS)
Nitrogen Oxides (NOx)
Operating Permit (OP)
Part Per Million (ppm)
Parts per million by volume, dry basis (ppmvd)
Particulate Matter (PM)
Particulate Matter less than or equal to 10 micrometers (PM_{10})
Prevention of Significant Deterioration (PSD)
Sulfur Dioxide (SO_2)
Volatile Organic Compounds (VOC)

IX. Open fires are prohibited except as allowed by Title 129, Chapter 30.

X. The source shall not cause or permit fugitive particulate matter to become airborne in such quantities and concentrations that it remains visible in the ambient air beyond the property line. (Title 129, Chapter 32)

XI. Application for review of plans or advice furnished by the Director will not relieve the source of legal compliance with any provision of these regulations, or prevent the Director from enforcing or implementing any provision of these regulations. (Title 129, Chapter 37)

XII. If and when the Director declares an air pollution episode as defined in Title 129, Chapter 38, Sections 003.01B, 003.01C, or 003.01D, the source shall immediately take all required actions listed in Title 129, App. I until the Director declares the air pollution episode terminated.

Specific Conditions

XIII. Specific terms and conditions of this permit:

(A) Facility Design, Installation and Operation Requirements

(1) Emission Equipment. This permit allows for installation (construction) of two natural gas-fired General Electric 7E Class combustion turbines with heat recovery steam generators (Units 001 and 002), two natural gas-fired supplemental duct burners (Units 003 and 004), and the following ancillary equipment (Table 1):

Table 1. Ancillary Equipment.

Unit	Equipment Description	Nominal Capacity	Fuel
005	Auxiliary Boiler	28.4 / 27.1 MMBtu/hr	Natural Gas / Distillate Oil
006	Standby Generator	8.0 MMBtu/hr	Distillate Oil
007	Fire Pump	1.5 MMBtu/hr	Distillate Oil
008	Evaporative Cooling Tower	81,000 gpm max	n/a

(2) Fuel Type. Units 001, 002, 003 and 004 shall combust only natural gas. Units 006 and 007 shall combust only distillate oil with less than or equal to 0.05 percent sulfur by weight. Unit 005 shall combust either natural gas or distillate oil with less than or equal to 0.05 percent sulfur by weight.

(3) Fuel Consumption Limit. Unit 005 shall not combust more than 289,000 gallons of distillate oil during any period of 12 consecutive calendar months. At no time during the first 11 calendar months after the date operation commences shall the sum of all the previous months' fuel usage exceed 289,000 gallons.

(4) Operation Limit. Units 006 and 007 each shall not operate more than 200 hours per year on a calendar year basis.

(5) Stack Dimensions. Final stack parameters shall be equivalent to the following dimensions listed in Table 2, or if modified from these values, the Department may require the permittee to reanalyze the air quality impacts of the facility.

Table 2. Stack Requirements.

Unit	Emission Point	Stack Height (ft)	Stack Exit Point Cross-Sectional Area (ft^2)
001/003	STK1	121.0	177.9
002/004	STK2	121.0	177.9
005	BOILER	35.1	3.1
006	EMGEN	10.25	0.55
007	FIREPUMP	14.0	0.14

Within 180 days after construction of this project is completed, the permittee shall determine the actual stack exit point dimensions. The permittee shall demonstrate compliance with 40 CFR 52.21(k) by complying with either of the following:

(a) Within 10 days after determining the actual stack exit point dimensions, the permittee shall certify in writing to the Department that the exit point dimensions comply with the values of Table 2. The certification shall contain the actual dimensions and diameters of the stacks as built. A copy of this certification shall be retained on site and be made available for inspection by the Department upon request.

(b) Within 60 days after the actual stack exit point dimensions are determined, the permittee shall provide to the Department the actual exit point dimensions. If any stack exit point dimensions differ from the information used in modeling for the basis of this permit (Table 2), the permittee shall provide a discussion of the discrepancy with respect to modeling issues. Specifically, the discussion shall contain justification as to why the modeling analysis remains valid with supporting conclusions. The Department may require that the project be remodeled to demonstrate compliance with 40 CFR 52.21(k).

(6) Cooling Tower. The multi-cell tower shall be equipped with high efficiency mist eliminators with a maximum total liquid drift not to exceed 0.002 percent of circulating water flow.

(B) Emission Limitations

(1) BACT Emission Limitations for Units 001, 002, 003 and 004. Pursuant to 40 CFR 52.21 for PSD, the permittee shall adhere to the following requirements which are deemed by the Department to be representative of current day BACT for the source category. All such controls shall be fully functional during emission unit operation except as allowed during emission unit startup and shutdown periods as defined in Condition XIII.(B)(1)(e). Any control equipment shall be installed and operated in accordance with the manufacturer's recommendations and shall be maintained and operated in a good working condition at all times.

(a) Nitrogen Oxides (NO_x): The control that has been determined to be BACT for this pollutant is the use of combustion controls and/or add-on pollution control technology to maintain an emission limit of 3.5 ppmvd

(24-hour average) corrected to 15% oxygen (O_2) for each combustion turbine/duct burner system. It should be noted that this BACT limit is more stringent than the limit as specified by NSPS, 40 CFR 60 Subpart GG for stationary gas turbines.

(b) Carbon Monoxide (CO): The control that has been determined to be BACT for this pollutant is the use of combustion controls and/or add-on pollution control technology to maintain an emission limit of 18.4 lb/hr (30-day rolling average) for each combustion turbine/duct burner (CT/DB) system.

(c) PM & PM_{10}: The control that has been determined to be BACT for these pollutants is the continuous use of good combustion practices and the use of natural gas. PM and PM_{10} emissions from each combustion turbine/duct burner system shall not exceed 10.8 lb/hr.

(d) BACT Limits Summary: Emissions shall not exceed the following BACT limits for equipment (Table 3). BACT limits do not apply during startup and shutdown periods as defined in Condition XIII.(B)(1)(e):

Table 3. BACT Emission Limits on Equipment [A]

Emission Units		**NO_x**		**CO**		**PM & PM_{10}**
Unit	**Fuel**	**ppmvd** [B]	**Avg. Period**	**Lb/hr**	**Avg. Period**	**lb/hr**
001/003	Natural Gas	3.5	24-hour	18.4	30-day	10.8
002/004	Natural Gas	3.5	24-hour	18.4	30-day	10.8

[A] All limits reflect combined emissions from the combustion turbine and associated duct burner.
[B] Concentration corrected to 15% excess oxygen (O_2).

(e) Startup, Shutdown, and Malfunction Requirements**:** Records of the duration of each startup, shutdown, and malfunction shall be kept as specified under Condition XIII.(G)(3). Emissions during startup, shutdown, and malfunctions shall be counted in annual emission inventories.

(i) Startup begins at the time of initial fuel firing of the unit(s) and continues until one hour after the unit(s) reaches Pre-Mix Operating Mode. No startup period shall exceed 5.5 hours.

(ii) Shutdown begins at the time the command signal is initiated to shutdown the unit(s) and continues until initial fuel firing during the next subsequent startup sequence.

(iii) Any excess emissions resulting from malfunction type conditions shall be addressed in accordance with Title 129, Chapter 35.

(2) Opacity Limitations.

(a) Opacity from each emission unit except Unit 005 shall not equal or exceed 20% pursuant to Title 129, Chapter 20, Section 005.

(b) Opacity for Unit 005 shall not exceed 20 percent (6-minute average), except for one 6-minute period per hour of not more than 27 percent opacity pursuant to 40 CFR 60.43c(c). The opacity standard shall not apply during periods of startup, shutdown, or malfunction, pursuant to 40 CFR 60.43c(d).

(3) BACT Emission Limitations for Unit 005. Nitrogen Oxides (NO_x): The control that has been determined to be BACT for this pollutant is the use of combustion controls and/or add-on pollution control technology to maintain an emission limit of 0.05 lb/MMBtu when firing natural gas, and 0.1 lb/MMBtu when firing distillate oil based on a 3-hour test average.

(C) Notification Requirements (NSPS)

(1) The permittee shall provide to the Nebraska Department of Environmental Quality and EPA Administrator written notification as follows in accordance with 40 CFR 60.7:

(a) A notification of the date construction commenced (Units 001 through 005) postmarked no later than 30 days after such date, 40 CFR 60.7(a)(1).

(b) A notification of the actual date of initial start up of the equipment postmarked within 15 days after such date, 40 CFR 60.7(a)(3).

(c) Any other notification requirements of 40 CFR 60.7, should they be applicable to the facility.

(D) Testing Requirements

(1) Nitrogen Oxides (NO_x): The permittee shall conduct initial performance testing of the turbines to demonstrate compliance with the NO_x NSPS emission standard at four operating loads as required pursuant to 40 CFR 60.335 and 40 CFR 60.8. NO_x emissions testing may be waived upon approval by EPA based on Condition XIII.(E)(1)(b). The permittee shall conduct initial performance testing of the auxiliary boiler (Unit 005) to demonstrate compliance with the BACT emission limits in Condition XIII.(B)(3).

(2) Other Pollutants: The permittee shall conduct initial performance testing of Units 001/003 and 002/004 to demonstrate compliance with emission limits for PM, and opacity. These tests shall be conducted at the 100% load condition to demonstrate compliance with the BACT limit for PM and with the opacity standard in Condition XIII.(B)(2)(a). If add-on pollution control equipment is utilized to comply with the CO emission limits in Condition XIII.(B)(1)(b),

performance testing for CO shall be conducted upstream and downstream of the control equipment to verify that a minimum CO control efficiency of 75% is obtained. The permittee shall conduct initial performance testing for opacity of Unit 005 when firing distillate oil at the 100% load condition, per 40 CFR 60.45c(a).

(3) Testing Schedules and Procedures: Initial performance testing shall be conducted and a written report submitted within sixty (60) days after the first day of achieving maximum operational capacity but no longer than 180 days from initial startup for each turbine. Other testing requirements are as follows:

(a) Test Protocol: At least 90 days prior to the date of testing, the permittee shall develop and submit to the Department a formal "Test Protocol" which shall be approved by the Department prior to commencement of testing. This "Test Protocol" shall include, as a minimum, the following items:

(i) A test plan detailing the methods and procedures that will be used for testing;

(ii) A test schedule describing the tentative agenda as to when testing will occur;

(iii) A description as to how testing will determine compliance with the permit conditions along with a copy of the permit.

(iv) Any request to test a similar or identical turbine in lieu of actual performance testing of that turbine.

(v) A description of the load testing for NO_x and CO emissions as required by Conditions XIII.(D)(1) and XIII.(D)(3)(d).

(vi) A description as to how testing will satisfy multiple requirements shall be submitted in the "Test Protocol" or in a separate correspondence and must be approved by the Department.

(b) Pre-Test Notification: The Department shall be notified in writing at least thirty (30) days prior to the date of testing to allow the Department the option of witnessing these tests.

(c) Testing Identical Units: Testing of similar or identical emission units covered by this permit shall be requested prior to testing in the "Test Protocol" as required by subpart (a) of this condition. Such a request shall outline the differences and/or similarities between the units and shall describe and justify the reason(s) that stack testing of one such unit is representative of testing the other. This condition does not apply to NO_x emissions. NO_x emissions must be tested for each emission unit with applicable limitations.

(d) Test Methods: Testing shall be done in accordance with Nebraska Title 129, Chapter 34 - Emission Sources; Testing; Monitoring, and 40 CFR 60, Appendix A. Only the following approved methods in Table 4 below shall be used for emissions testing unless another method has been proposed in the "Test Protocol" and approved by the Department or the EPA. Refer to 40 CFR 60, Appendix A for test methods.

Table 4. Test Methods for Pollutants

Criteria Pollutant:	Reference Method:
Nitrogen Oxides (NO_x)	Method 20, per 40 CFR 60.335(c)(3)
Carbon Monoxide (CO)	Method 10 or 10B
Particulate Matter	Methods 5 and 202
Opacity	Method 9

(e) Final Test Report: A "Final Report" from emissions performance testing shall contain, as a minimum, the following items:

(i) An executive summary.

(ii) A statement as to whom is performing the stack testing along with their qualifications and experience in such areas.

(iii) A description of the source testing conditions, including but not limited to turbine information for each run including, engine rpm, turbine load (i.e. MVA or KW), actual achieved firing rate (i.e. MMBtu/hr), quantity of fuel consumed (scf), heating value of the fuel, ambient conditions, etc.

(iv) A description of the source air pollution control equipment parameters.

(v) Copies of all data sheets from all test runs.

(vi) A description and explanation of any erroneous data or unusual circumstance(s) and the cause for such situation.

(vii) A final conclusion section describing the outcome of the testing.

(viii) A copy of the "Final Report" including test results certified by the tester, shall be provided to the Department within forty-five (45) days after the completion of the tests.

(E) Monitoring Requirements

(1) Continuous Emission Monitor (CEM) Requirements: The permittee shall operate a continuous emission monitor (CEM) system to measure NO_x, CO and oxygen (O_2) emissions from the stacks of Units 001/003 and 002/004. The monitoring system shall be used for measuring and demonstrating compliance with the NO_x and CO emission limitations.

(a) The CO CEM shall be installed, calibrated and operated according to manufacturer's specifications and shall meet the requirements contained in 40 CFR 60, Appendix B, Performance Specification 4A and 40 CFR 60, Appendix F. The CEM shall be used to demonstrate compliance with the CO limits in Condition XIII.(B)(1)(b).

(b) The NO_x and O_2 CEM shall be installed, calibrated and operated according to manufacturer's specifications and shall meet the requirements contained in 40 CFR 75.

(c) The CEMS shall be operational upon initial startup of each combustion turbine and shall meet the requirements of paragraphs (a) and (b) of this permit condition upon the completion of the initial certification testing.

(d) Excluding periods of startup and shutdown as addressed in Condition XIII.(B)(1)(e), compliance with the NO_x and CO limits found in Condition XIII.(B)(1) of this permit shall be demonstrated with the CEMs.

(e) Under the Acid Rain rules, 40 CFR 75.10(d) *Primary equipment hourly operating requirements*, the NOx CEMs must be operated at all times during fuel combustion, except during periods of calibration, quality assurance, or preventive maintenance pursuant to 40 CFR 75.21 and 40 CFR 75, Appendix B, and except during periods of repair, periods of backups of data from the data acquisition and handling system, or recertification performed pursuant to 40 CFR 75.20.

(F) Reporting Requirements

For the purposes of reporting as required under 40 CFR 60.7, 40 CFR 60.48c(d), 40 CFR 60.334(c), and 40 CFR 75, the permittee shall submit quarterly reports to the EPA Administrator, designated as the EPA Region VII office, per 40 CFR 60.4, and to the Department. Required quarterly reporting items include as a minimum Items (1), (2), and (4) listed below. All quarterly reports shall be postmarked by the 30th day following the end of each calendar quarter.

(1) Excess Emissions: Periods of excess emissions shall be recorded and reported in accordance with 40 CFR 60.7.

(2) Malfunctions: For periods during which any systems related to emissions performance either malfunction or are inoperative during turbine operation, the permittee shall maintain records of the occurrence and duration of the event. These records shall be submitted in the quarterly report, per 40 CFR 60.7(c)(3).

(3) Miscellaneous Correspondence: Reports, notifications, Test Protocol, and Final Report from testing shall be clearly labeled as such and mailed to the Department. Those submittals required to be submitted to the EPA Administrator shall be submitted to EPA Region VII per 40 CFR 60.4. All correspondences for this source shall reference the following NDEQ Facility

Identification number: 076739, unless otherwise specified. Submittal of electronic media shall be contained on diskette or compact disk (CD) form unless otherwise superseded by other procedures in writing by the Department.

(4) Acid Rain Reporting: The permittee shall prepare and submit reports as required under the Acid Rain rules, 40 CFR 75, Subpart G.

(G) Recordkeeping Requirements

(1) NSPS Recordkeeping Requirements: The permittee shall perform recordkeeping pursuant to 40 CFR 60.7, including, but not limited to, excess emission reports as specified in 40 CFR 60.7(c), as well as a file of other measurements, testing, etc., in accordance with 40 CFR 60.7(f).

(2) Acid Rain Rule Recordkeeping Requirements: The permittee shall perform recordkeeping pursuant to Acid Rain rules under 40 CFR 75, Subpart F, including, but not limited to, calculated annual emissions of NO_x, SO_2, and CO_2.

(3) Other Recordkeeping Requirements: All records shall be maintained on-site for a minimum period of five (5) years from the date of the record. These records shall be readily accessible to Department representatives and/or representatives of the EPA upon request. The permittee shall maintain written records or computer data of the following items to show compliance with the terms and conditions of this permit:

(a) Fuel consumption: The daily quantity of distillate oil consumed in Emission Unit 005 shall be recorded and used to calculate the total annual distillate oil consumption to demonstrate compliance with Condition XIII.(A)(3). The daily quantities of any fuels combusted in Emission Units 003, 004, and 005 shall be recorded as required under the NSPS, per 40 CFR 60.48c(g).

(b) Hours of Operation: The annual hours of operation for Units 006 and 007 shall be recorded to demonstrate compliance with Condition XIII.(A)(4).

(c) Cooling Tower: Records of the vendor-guaranteed maximum total liquid drift to show compliance with Condition XIII.(A)(6). No chromium-based water treatment chemicals will be used in the circulating water system and thus the requirements of 40 CFR 63, Subpart Q shall not apply.

(d) Quarterly Reports: Records of quarterly reports as required by Condition XIII.(F) and 40 CFR 60.7 for NSPS requirements.

(e) Stack Certification: A copy of the stack certification as required by Condition XIII.(A) to verify the stack information of Table 2 of Condition XIII.(A)(5).

(f) NSPS Notifications: A copy of the written notifications as required by Condition XIII.(C).

(g) Startups, Shutdowns, and Malfunctions: Records of the startup, shutdown, and malfunction periods as per Condition XIII.(B)(1)(e) including date and duration of each period.

(H) Acid Rain Requirements

(1) The permittee shall comply with the applicable provisions of the Acid Rain Program of Title IV of the Clean Air Act (Title 129, Chapter 26).

The undersigned issues this document on behalf of the Director in accordance with Title 129 – Nebraska Air Quality Regulations.

11/14/05

Date

Shelley Kaderly
Air Quality Division Administrator

FACT SHEET

Nebraska Public Power District
Beatrice Power Station
20261 SW 61st Road
Beatrice, Nebraska 68310

November 14, 2005

DESCRIPTION OF THE FACILITY OR ACTIVITY:

Purpose: The purpose of this permit revision is to incorporate as-built changes and to clarify some of the requirements contained in the original construction permit issued on 5/29/03. The requirements of the revised permit supersede all requirements of the original construction permit.

Emission Source Location: The Beatrice Power Station is located approximately 4.5 miles northwest of Beatrice, Nebraska at 20261 SW 61st Road. The facility site is located in Section 12 of Township 4 North, Range 5 East, in Gage County.

Summary of Project: The Nebraska Public Power District (NPPD) had applied for and obtained a construction permit dated 5/29/03 for a new electrical power generating station. The station consists of a two-on-one combined cycle combustion turbine system composed of two General Electric 7E Class natural gas-fired combustion turbines (nominal 80 MW each, Units 001 & 002), with two supplementary-fired heat recovery steam generators (HRSG), and a steam powered turbine generator (nominal 90 MW). Total nominal electrical generating capacity is approximately 250 MW. The station also includes a 28.4 (gas)/27.1 (oil) MMBtu/hr auxiliary boiler (Unit 005, originally permitted at 73.3 MMBtu/hr), a 750 kW standby electrical generator (Unit 006, originally permitted at 1,000 kW), a 275-horsepower fire pump (Unit 007, originally permitted at 302 hp), and a multi-cell evaporative cooling tower (Unit 008). The maximum water flowrate through the cooling tower is 81,000 gpm, down from 85,000 gpm. The 10,000-gallon aboveground diesel storage tank that was included in the permit was not installed. The tank was originally intended to be used to store diesel fuel when the combustion turbines were projected to fire diesel fuel and natural gas. Subsequently, the design of combustion turbines was changed such that only natural gas would be used, and therefore, the diesel fuel storage tank was not installed.

Mode of Operation: The combustion turbines (Units 001 & 002) and supplemental duct burners (Units 003 & 004) combust only natural gas or cleaner fuels. The auxiliary boiler (Unit 005) combusts natural gas or distillate oil containing less than or equal to 0.05 percent sulfur by weight, with distillate oil firing limited to 289,000 gallons per year. The standby generator (Unit 006) and fire pump (Unit 007) combust only distillate oil and each is limited to operating a maximum of 200 hours per year.

TYPE AND QUANTITY OF AIR CONTAMINANT EMISSIONS ANTICIPATED:

There is only a slight change in the quantity of pollutant emissions from the originally permitted facility, due to the decrease in capacities of some equipment. Revised emission calculation sheets are provided in Attachment A. A summary is of the previously permitted emissions and the revised emissions are shown below.

Regulated Pollutant	Previously Permitted Emissions (tons/year)	Revised Emissions (tons/year)
Particulate Matter (PM)	109.7	106.3
PM smaller than 10 microns (PM_{10})	104.8	101.6
Sulfur Dioxide (SO_2)	8.1	8.0
Oxides of Nitrogen (NO_x)	126.7	116.3
Carbon Monoxide (CO)	177.5	167.6
Volatile Organic Compounds (VOC)	26.7	24.7
Sulfuric Acid Mist (H_2SO_4)	2.2	2.2
Hazardous Air Pollutants (HAP):		
Formaldehyde	5.9	5.9
Total HAPs	9.6	9.3

APPLICABLE REQUIREMENTS AND VARIANCES OR ALTERNATIVES TO REQUIRED STANDARDS:

Revision of a construction permit without public review has to meet the following conditions from Title 129, Chapter 17, Section 014.

014.01A: No emission limit in the original construction permit is exceeded.

No emission limit will be modified per this revision. The revised permit does add restrictions on the duration of turbine startup periods.

014.01B: No applicable requirement included in an operating permit to which the source is subject is violated.

The source has not been issued an operating permit.

014.01C: No emissions limit, equipment or operational standard applicable to the source will be exceeded.

No emission limits are being changed. No equipment or operational standards will be exceeded. The requirement to install a flow meter on the turbine exhaust has been removed. However, this is because the exhaust flow rate can be calculated using fuel combustion parameters at least as accurately as an exhaust flow meter.

014.01D: No emissions limit, equipment or operation standard assumed to avoid a classification that would render the source subject to an otherwise applicable requirement will be exceeded.

No emission limit, equipment or operational standard assumed to avoid a classification was modified per this revision.

014.01E: The nature of the constructed facility will be consistent with that described in the original public notice materials.

The nature of the constructed facility per this revision is consistent with the 2003 public notice. This revision results in a decrease in facility-wide potential emissions due to the reduced capacity/size of ancillary equipment.

The following permit conditions specific to the permit have been revised and are discussed as follows:

Condition XIII.(A)(1): Table 1 has been updated with as-built capacities for ancillary equipment. All capacities have decreased from the originally permitting facility.

Condition XIII.(A)(2): "pipeline quality" was removed from the description of natural gas. Throughout the permit, the usage of the term natural gas has been made consistent. The previous permit documents used different terms at different places. Natural gas (defined in 40 CFR 60.331) is the appropriate reference throughout this permit. The sulfur content of fuel oil was also revised to correct a inconsistency with the emission calculations by allowing less than **or equal** to 0.05% Sulfur content.

Condition XIII.(A)(5): Table 2 has been updated with as-built stack parameters. Revised air dispersion modeling was conducted and submitted to the Department to show that the as-built stack parameters continue to meet the NAAQS and PSD Increments.

Condition XIII.(B)(1)(c): "pipeline quality" was removed from the description of natural gas. Throughout the permit, the usage of the term natural gas has been made consistent. The previous permit documents used different terms at different places.

Condition XIII.(B)(1)(d): The language in this permit condition has been revised to improve clarity that the BACT emissions limits do not apply during periods of startup and shutdown of Units 001/003 and Units 002/004.

Condition XIII.(B)(1)(e): The language in this permit condition has been revised to clarify that emissions during startup, shutdown, and malfunctions shall be counted in annual emission inventories even though they are not included in the emissions averaging to show compliance with the BACT limits.

This condition was also expanded to indicate how a startup and shutdown is defined because BACT limits do not apply during startup and shutdown periods (therefore the requirements of Chapter 35 do not apply during these periods).

Emission limits do apply during periods of malfunction and excess emissions during these periods shall be handled in accordance with Title 129, Chapter 35. A malfunction is any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner (40 CFR 60.2). Turbine generator trips, fuel flow control valves or ammonia injection system failures are examples of malfunctions. Failures that are caused in part by poor maintenance or careless operation are not malfunctions.

Condition XIII.(E)(1): Removed the requirement to install and operate an exhaust flow monitor for each stack. Instead, the fuel flow meter is used to calculate exhaust flow rate with the same accuracy of an in-stack flow monitor.

Condition XIII.(E)(2): Deleted entire condition related to the fuel sulfur and fuel-bound nitrogen monitoring requirements. The source discussed this issue with EPA Region VII and the Department as detailed in a letter dated August 19, 2004, and submitted to the Department. Since the July 8, 2004 version of 40 CFR 60, Subpart GG has now been adopted into Title 129, there is no requirement to perform fuel monitoring because of exclusive use of natural gas in the combustion turbines.

Condition XIII.(G)(3)(g): Changed part of the first sentence from "…and malfunction periods as defined by Condition..." to "…and malfunction periods as per Condition..." to more accurately reference Condition XIII.(B)(1)(e) because malfunction is not defined in the referenced condition.

STATUTORY OR REGULATORY PROVISIONS ON WHICH PERMIT REQUIREMENTS ARE BASED:

Applicable regulations: Title 129 - Nebraska Air Quality Regulations as amended September 25, 2005.

Subject: Beatrice Power Station - Emission Calculations
Task: Total Facility Potential Emissions Summary

PSD-Regulated Air Pollutants	Combust Turbine No. 1 lb/hr	Combust Turbine No. 2 lb/hr	Duct Burner No. 1 lb/hr	Duct Burner No. 2 lb/hr	Auxiliary Boiler				Generator			Fire Pump			Cooling T.	Distillate Oil Storage (lb/hr)	Facility Potential Emissions		
					Nat. Gas lb/hr	Oil lb/hr	Fuel gal/hr	Consumption MMgal/yr	Oil lb/hr	Fuel Consumption gal/hr	MMgal/yr	Oil lb/hr	Fuel gal/hr	Consumption MMgal/yr	5-Cells lb/hr (total)		Scenario 1 TPY (total)	Scenario 2 TPY (total)	Worst Case TPY
Nitrogen Oxides (NO_x)	12.26	12.26	NA*	NA*	1.42	2.71	195	0.289	12.50	58	0.012	4.85	11	0.0022	0.00	0.00	115.36	116.31	**116.31**
Carbon Monoxide (CO)	18.4	18.4	NA*	NA*	1.42	1.36			1.27			0.99			0.00	0.00	167.64	167.59	**167.64**
Particulate Matter (PM)	10.07	10.07	0.69	0.69	0.43	0.54			0.19			0.09			2.27	0.00	106.17	106.25	**106.25**
Particulate Matter < 10 *u* m (PM_{10})	10.07	10.07	0.69	0.69	0.43	0.54			0.19			0.09			1.22	0.00	101.54	101.63	**101.63**
Volatile Organic Compnds (VOC)	1.79	1.79	0.83	0.83	0.28	0.81			0.30			0.18			0.00	0.02	24.34	24.73	**24.73**
Sulfur Dioxide (SO_2)	0.75	0.75	0.03	0.03	0.02	1.36			0.35			0.09			0.00	0.00	6.98	7.97	**7.97**
Lead (Pb)	0.00	0.00	0.00	0.00	0.00	0.00			0.00			0.00			0.00	0.00	0.00	0.00	**0.00**
Sulfuric Acid (H_2SO_4)	0.24	0.24	0.01	0.01	0.00	0.02			0.00			0.00			0.00	0.00	2.17	2.19	**2.19**

Hazardous Air Pollutants (not regulated under PSD rules, per federal CAA)	Combust Turbine No. 1 lb/hr	Combust Turbine No. 2 lb/hr	Duct Burner No. 1 lb/hr	Duct Burner No. 2 lb/hr	Auxiliary Boiler				Generator			Fire Pump			Cooling T.	Distillate Oil Storage (lb/hr)	Facility Potential Emissions		
					Nat. Gas lb/hr	Oil lb/hr	Fuel gal/hr	Consumption MMgal/yr	Oil lb/hr	Fuel Consumption gal/hr	MMgal/yr	Oil lb/hr	Fuel gal/hr	Consumption MMgal/yr	5-Cells lb/hr (total)		Scenario 1 TPY (total)	Scenario 2 TPY (total)	Worst Case TPY
1,3-Butadiene	0.0004	0.0004	0.0000	0.0000	0.0000	0.0000	195	0.289	0.0000	58	0.012	0.0001	11	0.0022	0.0000	0.0000	0.0036	0.0036	**0.0036**
Acetaldehyde	0.0377	0.0377	0.0000	0.0000	0.0000	0.0000			0.0002			0.0012			0.0000	0.0000	0.3300	0.3300	**0.3300**
Acrolein	0.0060	0.0060	0.0000	0.0000	0.0000	0.0000			0.0001			0.0001			0.0000	0.0000	0.0528	0.0528	**0.0528**
Arsenic	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001			0.0000			0.0000			0.0000	0.0000	0.0000	0.0001	**0.0001**
Benzene	0.0113	0.0113	0.0001	0.0001	0.0001	0.0000			0.0062			0.0014			0.0000	0.0000	0.1006	0.1006	**0.1006**
Beryllium	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001			0.0000			0.0000			0.0000	0.0000	0.0000	0.0001	**0.0001**
Cadmium	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001			0.0000			0.0000			0.0000	0.0000	0.0000	0.0001	**0.0001**
Chromium	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001			0.0000			0.0000			0.0000	0.0000	0.0000	0.0001	**0.0001**
Dichlorobenzene	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000			0.0000	0.0000	0.0005	0.0005	**0.0005**
Ethylbenzene	0.0301	0.0301	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000			0.0000	0.0000	0.2639	0.2639	**0.2639**
Formaldehyde	0.6684	0.6684	0.0026	0.0026	0.0021	0.0065			0.0006			0.0018			0.0000	0.0000	5.8869	5.8902	**5.8902**
Hexane	0.0000	0.0000	0.0612	0.0612	0.0502	0.0000			0.0000			0.0000			0.0000	0.0000	0.7562	0.7190	**0.7562**
Lead	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002			0.0000			0.0000			0.0000	0.0000	0.0002	0.0004	**0.0004**
Manganese	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002			0.0000			0.0000			0.0000	0.0000	0.0000	0.0001	**0.0001**
Mercury	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001			0.0000			0.0000			0.0000	0.0000	0.0000	0.0001	**0.0001**
Naphthalene	0.0012	0.0012	0.0000	0.0000	0.0000	0.0002			0.0010			0.0001			0.0000	0.0000	0.0111	0.0112	**0.0112**
Nickel	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001			0.0000			0.0000			0.0000	0.0000	0.0000	0.0001	**0.0001**
Polynuclear Aromatic Hyd. (PAHs)	0.0021	0.0021	0.0000	0.0000	0.0000	0.0000			0.0007			0.0001			0.0000	0.0000	0.0183	0.0183	**0.0183**
Propylene	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0223			0.0039			0.0000	0.0000	0.0026	0.0026	**0.0026**
Propylene Oxide	0.0273	0.0273	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000			0.0000	0.0000	0.2392	0.2392	**0.2392**
Selenium	0.0000	0.0000	0.0000	0.0000	0.0000	0.0004			0.0000			0.0000			0.0000	0.0000	0.0000	0.0003	**0.0003**
Toluene	0.1224	0.1224	0.0001	0.0001	0.0001	0.0012			0.0023			0.0006			0.0000	0.0000	1.0738	1.0746	**1.0746**
Xylene	0.0602	0.0602	0.0000	0.0000	0.0000	0.0000			0.0015			0.0004			0.0000	0.0000	0.5280	0.5280	**0.5280**
																Total HAPs:	9.27	9.24	**9.27**

Scenario No. 1: Natural gas combustion in CTs, Duct Burners, and Auxiliary Boiler at 8,760 hours per year. Generator and Fire Pump are diesel-only sources.

Scenario No. 2: Natural gas combustion in CTs and Duct Burners. Distillate oil combustion in Auxiliary Boiler, Generator and Fire Pump.

* Duct burner lb/hr emission rate is incorporated into combustion turbine emission rate, which is based on performance of add-on control equipment.

Subject: Beatrice Power Station - Emission Calculations
Task: Natural Gas Combustion: GE 7E Class Turbines (Units 001 & 002)

Natural Gas-Fired Turbine: SCC 2-01-002-01

Hours	Power Output (MW)	Horsepower (HP)	Heating Value (Btu/SCF)	Heat Input MMBtu/hr	Fuel Input (SCFH)	Fuel Use (MMCF/yr)
8,760	80.7	108,220	1,020	941.4	922,941	8,085.0

PSD-Regulated Air Pollutants	CAS#	Emission Factor (lb/MMBtu)	Pollutant Emissions	
			lb/hr	TPY
Nitrogen Oxides (NO_x)[a]	10102-43-9	1.302E-02	12.26	**53.7**
Carbon Monoxide (CO)[a]	630-08-0	1.955E-02	18.40	**80.6**
Particulate Matter (PM)[b]	-	1.070E-02	10.07	**44.1**
Particulate Matter < 10 Microns (PM_{10})[b]	-	1.070E-02	10.07	**44.1**
Volatile Organic Compounds (VOC)[b]	-	1.900E-03	1.79	**7.8**
Sulfur Dioxide (SO_2)[b&c]	7446-09-5	8.000E-04	0.75	**3.3**
Sulfuric Acid (H_2SO_4)[b&c]	7664-93-9	2.549E-04	0.24	**1.05**

Hazardous Air Pollutants (not regulated under PSD rules, per federal CAA)	CAS#	Emission Factor (lb/MMBtu)	Pollutant Emissions	
			lb/hr	TPY
1,3-Butadiene[d]	106-99-0	4.300E-07	0.0004	**0.0018**
Acetaldehyde[d]	75-07-0	4.000E-05	0.0377	**0.1649**
Acrolein[d]	107-02-8	6.400E-06	0.0060	**0.0264**
Benzene[d]	71-43-2	1.200E-05	0.0113	**0.0495**
Ethylbenzene[d]	100-41-4	3.200E-05	0.0301	**0.1319**
Formaldehyde[d]	50-00-0	7.100E-04	0.6684	**2.9276**
Naphthalene[d]	91-20-3	1.300E-06	0.0012	**0.0054**
Polynuclear Aromatic Hydro. (PAHs)[d]	-	2.200E-06	0.0021	**0.0091**
Propylene Oxide[d]	75-56-9	2.900E-05	0.0273	**0.1196**
Toluene[d]	108-88-3	1.300E-04	0.1224	**0.5360**
Xylene[d]	1330-20-7	6.400E-05	0.0602	**0.2639**
			Total HAPs	**4.2360**

Notes:

[a] Emissions based on add-on control equipment. NO_x: SCR at 3.5 ppm; CO: CatOx at 18.4 lb/hr.

[b] Emissions based on manufacturers data.

[c] Maximum sulfur content of 0.30 gr/100 scf for natural gas.

[d] Emission factors from AP-42 (04/00), Table 3.1-3.

Subject: Beatrice Power Station - Emission Calculations
Task: Natural Gas Combustion: Duct Burner (Units 003 & 004)

Natural Gas Combustion (Electric Services): SCC 1-01-006-02

Hours	Power Output (kW)[a]	Horsepower (HP)[a]	Heating Value (Btu/SCF)	Heat Input MMBtu/hr	Fuel Input (SCFH)	Fuel Use (MMCF/yr)
8,760	NA	NA	1,020	34.7	34,020	298.0

PSD-Regulated Air Pollutants	CAS#	Emission Factor (lb/MMBtu)	Pollutant Emissions	
			lb/hr	TPY
Nitrogen Oxides (NO_x)[b]	10102-43-9	8.000E-02	2.78	**12.2**
Carbon Monoxide (CO)[b]	630-08-0	1.000E-01	3.47	**15.2**
Particulate Matter (PM)[b]	-	2.000E-02	0.69	**3.0**
Particulate Matter < 10 Microns (PM_{10})[b]	-	2.000E-02	0.69	**3.0**
Volatile Organic Compounds (VOC)[b]	-	2.400E-02	0.83	**3.6**
Sulfur Dioxide (SO_2)[b&c]	7446-09-5	8.357E-04	0.03	**0.1**
Lead (Pb)[e]	7439-92-1	4.900E-07	0.00	**0.0**
Sulfuric Acid (H_2SO_4)[b&c]	7664-93-9	2.305E-04	0.01	**0.04**

Hazardous Air Pollutants (not regulated under PSD rules, per federal CAA)	CAS#	Emission Factor (lb/MMBtu)	Pollutant Emissions	
			lb/hr	TPY
Benzene[d]	71-43-2	2.059E-06	0.0001	**0.0003**
Dichlorobenzene[d]	25321-22-6	1.176E-06	0.0000	**0.0002**
Formaldehyde[d]	50-00-0	7.353E-05	0.0026	**0.0112**
Hexane[d]	110-54-3	1.765E-03	0.0612	**0.2682**
Lead[e]	7439-92-1	4.900E-07	0.0000	**0.0001**
Naphthalene[d]	91-20-3	5.980E-07	0.0000	**0.0001**
Polynuclear Aromatic Hydro. (PAHs)[d]	-	8.647E-08	0.0000	**0.0000**
Toluene[d]	108-88-3	3.333E-06	0.0001	**0.0005**
			Total HAPs	**0.2806**

Notes:

[a] Not applicable for duct burner.
[b] Emissions based on manufacturers data.
[c] Maximum sulfur content of 0.30 gr/100 scf for natural gas.
[d] Emission factors from AP-42 (07/98), Table 1.4-3.
[e] Emission factors from AP-42 (07/98), Table 1.4-2.

Subject: Beatrice Power Station - Emission Calculations
Task: Natural Gas Combustion: Aux. Boiler (Unit 005)

Natural Gas Combustion (Electric Services): SCC 1-01-006-02

Hours	Power Output (kW)[a]	Horsepower (HP)[a]	Heating Value (Btu/SCF)	Heat Input MMBtu/hr	Fuel Input (SCFH)	Fuel Use (MMCF/yr)
8,760	NA	NA	1,020	28.4	27,873	244.2

PSD-Regulated Air Pollutants	CAS#	Emission Factor (lb/MMBtu)	Pollutant Emissions	
			lb/hr	TPY
Nitrogen Oxides (NO_x)[b]	10102-43-9	5.000E-02	1.42	**6.2**
Carbon Monoxide (CO)[b]	630-08-0	5.000E-02	1.42	**6.2**
Particulate Matter (PM)[b]	-	1.500E-02	0.43	**1.9**
Particulate Matter < 10 Microns (PM_{10})[b]	-	1.500E-02	0.43	**1.9**
Volatile Organic Compounds (VOC)[b]	-	1.000E-02	0.28	**1.2**
Sulfur Dioxide (SO_2)[b]	7446-09-5	7.000E-04	0.02	**0.1**
Lead (Pb)[c]	7439-92-1	4.900E-07	0.00	**0.0**
Sulfuric Acid (H_2SO_4)	7664-93-9	negl.	0.00	**0.00**

Hazardous Air Pollutants (not regulated under PSD rules, per federal CAA)	CAS#	Emission Factor (lb/MMBtu)	Pollutant Emissions	
			lb/hr	TPY
Benzene[d]	71-43-2	2.059E-06	0.0001	**0.0003**
Dichlorobenzene[d]	25321-22-6	1.176E-06	0.0000	**0.0001**
Formaldehyde[d]	50-00-0	7.353E-05	0.0021	**0.0092**
Hexane[d]	110-54-3	1.765E-03	0.0502	**0.2197**
Lead[c]	7439-92-1	4.900E-07	0.0000	**0.0001**
Naphthalene[d]	91-20-3	5.980E-07	0.0000	**0.0001**
Polynuclear Aromatic Hydro. (PAHs)[d]	-	8.647E-08	0.0000	**0.0000**
Toluene[d]	108-88-3	3.333E-06	0.0001	**0.0004**
			Total HAPs	**0.2299**

Notes:

[a] Not applicable.
[b] Draft EPC Specifications.
[c] Emission factors from AP-42 (02/98), Table 1.4-2.
[d] Emission factors from AP-42 (07/98), Table 1.4-3.

Subject: Beatrice Power Station - Emission Calculations
Task: Distillate Oil Combustion: Aux. Boiler (Unit 005)

Distillate Oil Combustion (Electric Services): SCC 1-01-005-01

Hours	Power Output (kW)[a]	Horsepower (HP)[a]	Heating Value (Btu/gal)	Heat Input MMBtu/hr	Fuel Input (gal/hr)	Fuel Use (MMgal/yr)
~ 1,481	NA	NA	139,000	27.1	195	0.289

PSD-Regulated Air Pollutants	CAS#	Emission Factor (lb/MMBtu)	Pollutant Emissions	
			lb/hr	TPY
Nitrogen Oxides (NO_x)[b]	10102-43-9	1.000E-01	2.71	**2.0**
Carbon Monoxide (CO)[b]	630-08-0	5.000E-02	1.36	**1.0**
Particulate Matter (PM)[b]	-	2.000E-02	0.54	**0.4**
Particulate Matter < 10 Microns (PM_{10})[b]	-	2.000E-02	0.54	**0.4**
Volatile Organic Compounds (VOC)[b]	-	3.000E-02	0.81	**0.6**
Sulfur Dioxide (SO_2)[b]	7446-09-5	5.000E-02	1.36	**1.0**
Lead (Pb)[d]	7439-92-1	9.000E-06	0.00	**0.0**
Sulfuric Acid (H_2SO_4)[c]	7664-93-9	7.000E-04	0.02	**0.01**

Hazardous Air Pollutants (not regulated under PSD rules, per federal CAA)	CAS#	Emission Factor (lb/MMBtu)	Pollutant Emissions	
			lb/hr	TPY
Arsenic[d]	7440-38-2	4.000E-06	0.0001	**0.0001**
Benzene[e]	71-43-2	1.500E-06	0.0000	**0.0000**
Beryllium[d]	7440-41-7	3.000E-06	0.0001	**0.0001**
Cadmium[d]	7440-43-9	3.000E-06	0.0001	**0.0001**
Chromium[d]	7440-47-3	3.000E-06	0.0001	**0.0001**
Ethylbenzene[e]	25321-22-6	4.500E-07	0.0000	**0.0000**
Formaldehyde[e]	50-00-0	2.400E-04	0.0065	**0.0048**
Lead[d]	7439-92-1	9.000E-06	0.0002	**0.0002**
Manganese[d]	7439-96-5	6.000E-06	0.0002	**0.0001**
Mercury[d]	7439-97-6	3.000E-06	0.0001	**0.0001**
Naphthalene[e]	91-20-3	8.100E-06	0.0002	**0.0002**
Nickel[d]	7440-02-0	3.000E-06	0.0001	**0.0001**
Polynuclear Aromatic Hydro. (PAHs)[e]	-	4.300E-07	0.0000	**0.0000**
Selenium[d]	7782-49-2	1.500E-05	0.0004	**0.0003**
Toluene[e]	108-88-3	4.400E-05	0.0012	**0.0009**
Xylene[e]	1330-20-7	7.800E-07	0.0000	**0.0000**
			Total HAPs	**0.0069**

Notes:

[a] Not applicable.
[b] Draft EPC Specifications. (max sulfur content = 0.05% wt)
[c] Emission factors from AP-42 (09/98), Table 1.3-1.
[d] Emission factors from AP-42 (09/98), Table 1.3-10.
[e] Emission factors from AP-42 (09/98), Table 1.3-9.

Subject: Beatrice Power Station - Emission Calculations
Task: Distillate Oil Combustion: Electrical Generator (Unit 006)

Distillate Oil Combustion (Electric Services): SCC 2-01-001-02

Hours	Power Output (kW)	Horsepower (HP)	Heating Value (Btu/gal)	Heat Input MMBtu/hr	Fuel Input (gal/hr)	Fuel Use (MMgal/yr)
200	750	1,050	139,000	8.0	58	0.012

PSD-Regulated Air Pollutants	CAS#	Emission Factor (g/bhp-hr)	Pollutant Emissions	
			lb/hr	TPY
Nitrogen Oxides (NO_x)[a]	10102-43-9	5.400E+00	12.50	**1.25**
Carbon Monoxide (CO)[a]	630-08-0	5.500E-01	1.27	**0.13**
Particulate Matter (PM)[a]	-	8.000E-02	0.19	**0.02**
Particulate Matter < 10 Microns (PM_{10})[a]	-	8.000E-02	0.19	**0.02**
Volatile Organic Compounds (VOC)[a]	-	1.300E-01	0.30	**0.03**
Sulfur Dioxide (SO_2)[a]	7446-09-5	1.500E-01	0.35	**0.03**
Lead (Pb)	7439-92-1	negl.	0.00	**0.00**
Sulfuric Acid (H_2SO_4)	7664-93-9	negl.	0.00	**0.00**

Hazardous Air Pollutants (not regulated under PSD rules, per federal CAA)	CAS#	Emission Factor (lb/MMBtu)	Pollutant Emissions	
			lb/hr	TPY
Acrolein[b]	107-02-8	7.880E-06	0.0001	**0.0000**
Acetaldehyde[b]	75-07-0	2.520E-05	0.0002	**0.0000**
Benzene[b]	71-43-2	7.760E-04	0.0062	**0.0006**
Formaldehyde[b]	50-00-0	7.890E-05	0.0006	**0.0001**
Naphthalene[c]	91-20-3	1.300E-04	0.0010	**0.0001**
Polynuclear Aromatic Hydro. (PAHs)[c]	-	8.200E-05	0.0007	**0.0001**
Propylene[b]	115-07-1	2.790E-03	0.0223	**0.0022**
Toluene[b]	108-88-3	2.810E-04	0.0023	**0.0002**
Xylene[b]	1330-20-7	1.930E-04	0.0015	**0.0002**
			Total HAPs	**0.0035**

Notes:

[a] Draft EPC Specifications. (max sulfur content = 0.05% wt)
[b] Emission factors from AP-42 (10/96), Table 3.4-3.
[c] Emission factors from AP-42 (10/96), Table 3.4-4.

Subject: Beatrice Power Station - Emission Calculations
Task: Distillate Oil Combustion: Fire Pump (Unit 007)

Distillate Oil Combustion (Electric Services): SCC 2-01-001-02

Hours	Power Output (kW)	Horsepower (HP)	Heating Value (Btu/gal)	Heat Input MMBtu/hr	Fuel Input (gal/hr)	Fuel Use (MMgal/yr)
200	NA	250	139,000	1.5	11	0.002

PSD-Regulated Air Pollutants	CAS#	Emission Factor (g/bhp-hr)	Pollutant Emissions	
			lb/hr	TPY
Nitrogen Oxides (NO_x)[a]	10102-43-9	8.800E+00	4.85	**0.49**
Carbon Monoxide (CO)[a]	630-08-0	1.800E+00	0.99	**0.10**
Particulate Matter (PM)[a]	-	1.700E-01	0.09	**0.01**
Particulate Matter < 10 Microns (PM_{10})[a]	-	1.700E-01	0.09	**0.01**
Volatile Organic Compounds (VOC)[a]	-	3.200E-01	0.18	**0.02**
Sulfur Dioxide (SO_2)[a]	7446-09-5	1.700E-01	0.09	**0.01**
Lead (Pb)	7439-92-1	negl.	0.00	**0.00**
Sulfuric Acid (H_2SO_4)	7664-93-9	negl.	0.00	**0.00**

Hazardous Air Pollutants (not regulated under PSD rules, per federal CAA)	CAS#	Emission Factor (lb/MMBtu)	Pollutant Emissions	
			lb/hr	TPY
1,3-Butadiene[b]	106-99-0	3.910E-05	0.0001	**0.0000**
Acrolein[b]	107-02-8	9.250E-05	0.0001	**0.0000**
Acetaldehyde[b]	75-07-0	7.670E-04	0.0012	**0.0001**
Benzene[b]	71-43-2	9.330E-04	0.0014	**0.0001**
Formaldehyde[b]	50-00-0	1.180E-03	0.0018	**0.0002**
Naphthalene[b]	91-20-3	8.480E-05	0.0001	**0.0000**
Polynuclear Aromatic Hydro. (PAHs)[b]	-	8.320E-05	0.0001	**0.0000**
Propylene[b]	115-07-1	2.580E-03	0.0039	**0.0004**
Toluene[b]	108-88-3	4.090E-04	0.0006	**0.0001**
Xylene[b]	1330-20-7	2.850E-04	0.0004	**0.0000**
			Total HAPs	**0.0010**

Notes:

[a] Draft EPC Specifications. (max sulfur content = 0.05% wt)

[b] Emission factors from AP-42 (10/96), Table 3.3-2.

Subject: Beatrice Power Station - Emissions Data
Task: Cooling Tower Particulate Matter (Unit 008)

Assumptions:

Tower Type: Induced Draft Counter Flow

Blowdown Set Point:	**5,500**	umhos/cm
Liquid Drift Loss:	**0.17**	lb/kgal (0.002% of cooling water)
Cooling Water Flow:	**16,200**	gpm, per cooling tower cell (5 cells = 81,000)
Operation Hours:	**8,760**	hrs/yr

1.) Water Quality at Blowdown (Worst-case)

Set Point (umhos/cm)	TDS (ppm)
5,500	2,751

2.) Circulation Rate

Flow Rate (gpm)	(kgal/hr)
16,200	972

3.) Liquid Drift Rate

			Potential Emissions, per cooling tower cell			
Liquid Drift	PM E.F.	PM_{10}	**PM Emissions**		**PM_{10} Emissions**	
(lb/kgal)	(lb/kgal)	Fraction[a]	**(lb/hr)**	**(tpy)**	**(lb/hr)**	**(tpy)**
0.17	0.00047	0.535	**0.45**	**1.99**	**0.24**	**1.07**

[a] PM/PM_{10} fraction calculated by interpolation of data provided in "Calculating Realistic PM_{10} Emissions from Cooling Towers", Joel Reisman and Gordon Frisbie, Abstract No. 216, presented at the 2001 Air & Waste Management Association 94th Annual Conference and Exhibition in Orlando, FL, June 25-28.